Testing of a Blue Economy Valuation Toolkit

Report (Output 03) by Mads Knudsen

Prepared for: The United Nations Economic Commission for Africa

14 December 2020

Table of Contents

Abbreviations

Abbreviations	
AU	African Union
BE	Blue Economy
BEVT	Blue Economy valuation toolkit
BNR	Banque National Rwandaisse
CFSVA	Comprehensive Food Security and Vulnerability and Nutrition assessment
CIF	Cost Insurance and Freight
DHS	Demographic Health Survey
EICV	Integrated Household Living Conditions Survey
FOB	Free on Board
IWRM	Integrated Water Resource Management
MINAGRI	Ministry of Agriculture and Animal Resources
MININFRA	Ministry of Infrastructure
MoE	Ministry of the Environment
NA	National Accounts
NISR	National Institute of Statistics Rwanda
REMA	Rwanda Environmental Management Agency
RLMU	Rwanda Land Management and Use Authority
RNRA	Rwanda Natural Resource Authority
RRA	Rwanda Revenue Authority
SNA	System of National Accounts
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNFCC	United Nations Framework Convention on Climate Change
VAT	Value Added Tax

1 Purpose of this report

The purpose of this interim report, *Review of Rwanda's System of National Accounts*, is to provide the following in the context of data required for the Blue Economy valuation toolkit (BEVT):

- Review on the System of National Accounts (SNA)
- Economic data that is captured and in what detail
- Economic data gaps that exist
- Natural capital information
- Social data
- Past and present Blue Economy accounting-linked initiatives

Subsequent to this report, further data collection and stakeholder engagement will ensue. The collected data will then be used to test the BEVT, where shortcomings will be noted. A presentation by the lead consultants and in-country consultants will take place on 23 November, whereafter comments and criticisms that arise from the presentations, as well as final meetings with stakeholders, will be included in an extended version of the current report. The final report will see the conclusion of the consultancy on 15 December 2020.

2 Background

The Blue Economy (henceforth BE) is understood to cover all aquatic and marine spaces and the economic sectors deriving from it, including fisheries, aquaculture, tourism, transport, shipbuilding, energy, bioprospecting, and underwater mining and related activities. As such, BE currently sustains several economic sectors and holds the potential for further promotion of structural transformation, sustainable economic growth, and enduring societal progress.

The full potential of BE is currently not well understood and future gains are threatened by lack of consideration to the complex nature of marine environments and maintaining a proper balance between social, environmental, and economic priorities.

UNECA has published a Blue Economy Policy Handbook with the aim to mainstream the development of Blue Economy into continental, sub-regional, and national policies, plans, laws, regulations, and practices for the development of African sustainable Blue Economy strategies."[1] The Policy Handbook provides a "provide a step-by-step guide" toward improved policies.

1. Agenda Setting
2. Coordination in formulating the BE Policy
3. Building National Ownership of the BE policy formulation process
4. Sector Identification and Prioritization
5. Designing the Blue Economy Policy
6. Policy Implementation
7. M&E

To support this, the BEVT collects data on the three key aspects of the BE (Economic, Social, and Natural Environment) in three test countries: Djibouti, Seychelles, and Rwanda.

[1] UNECA, 2016, Africa's Blue Economy: A policy Handbook

3 Snapshot of the Blue Economy Data in Rwanda

Being land-locked country, the Blue Economy is a fraction of the National Economy, and the country does not currently have a Blue Economy policy. On other hand, Rwanda has several larger water bodies and wetland areas, and it will be increasingly pertinent in the coming years given significant changes in rainfall patterns from climate change and the country's reliance on agriculture, tourism, and increasingly Methane in Kivu. With about 68% percent living of rainfed agriculture and the highest population density in Africa (525) the wetland and lake ecosystems are a cornerstone of the economy. With the prospect of the population doubling by 2050 and increased soil erosion from climate change related changes in rainfall patterns will put pressure on the Blue Economy ecosystems. Therefore, it is important to enhance planning of interventions by estimating the economic returns on conservation and preservation efforts.

This report estimates the value of the Blue Economy in three dimensions: Economic activity, Social indicators, and economic value of Ecosystems.

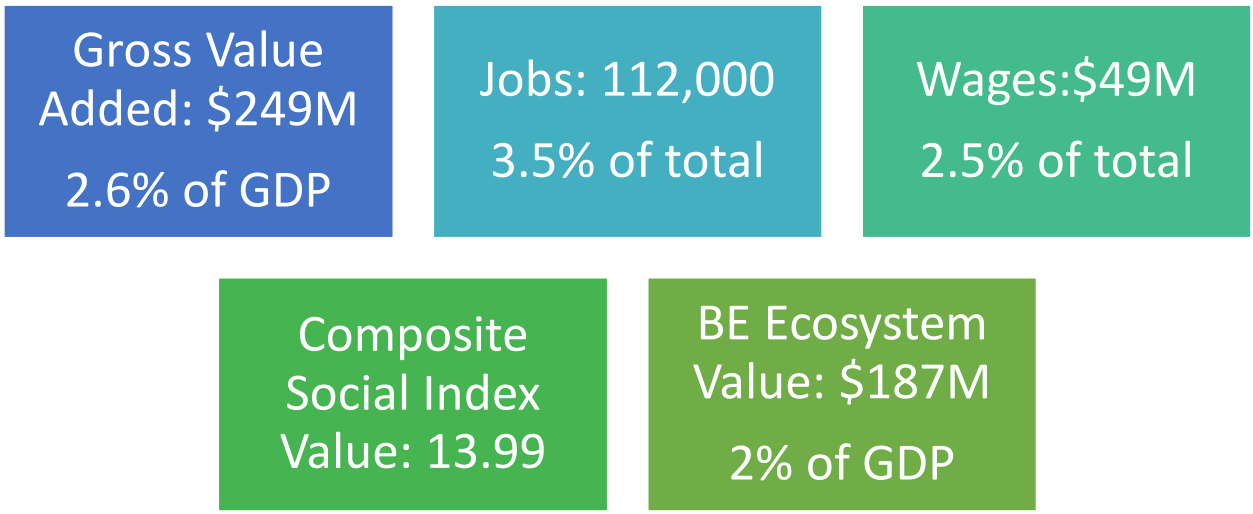
The report estimates that the economic activities of Blue Economy sectors account directly for $249 million in Gross Value Added in 2019, which is equivalent to about 2.6% of the Rwanda's Gross Domestic Product. This is the value of economic activities related to the use of water bodies such as fishing, hydro and methane energy, manufacturing of blue economy resources, lake tourism, as well as trade, transport, and other services derived from blue economy production. Similarly, the sectors generate about 112,000 jobs (3.5% of total jobs) at a total wage of $49 million (2.5% of total wages).

The total economic value of ecosystems is estimated at $187 which is approximately 2% of GDP. We define he ecosystems as water bodies and wetlands. The water surface constitutes 1,390 km^2 distributed on 101 water bodies/lakes. Larger bodies include the Lake Kivu, Nyibarongo and Kagera river, and smaller lakes in the Northern Province as well as at the southern fringes of the capital, Kigali (Bugesera District). Wetlands used for agriculture and conservation purposes constitute 2,068 km2 (including buffer zones). They are a major source of agricultural production and income for the wider population. The estimated figure includes the direct use value of the ecosystems such as agriculture and water use for firms and households, as well as the indirect value; namely, carbon sequestration, sediment retention, and flood attenuation. The figures are based on value estimates previously conducted for specific areas and generalized to the national level.

As for social indicators, we the toolkit includes values on several internationally comparable indicators. And integrate in a composite index. Rwanda's Composite Social Index value is 13.99, which is relatively high compared to the GDP per capita. However, the report finds a paucity of data specific to the communities relying in the Blue Economy.

The following sections provide the details on how the results have been obtained and assessment of existing data gaps.

Figure 1: Snapshot of the Blue Economy in Rwanda



4 The Economic Dimension

This section covers the Blue Economy in terms the value of economic activity. The First sub-section reviews the National Accounts and economic data sources. Secondly, the data is analyzed in to generate the inputs to the toolkit. Thirdly, the main outputs of the Toolkit are presented followed by a brief discussion on the remaining data-gaps.

4.1 Review of National Accounts and Economic Data

The National Accounts are prepared by the National Institute of Statistics Rwanda (NISR) and GDP estimates have been consistently provided on a quarterly basis since 1999. The conceptual framework for compiling national accounts is set out in the United Nations‟ System of National Accounts 1993 (SNA93) and the nomenclature used in ISIC.4. Estimates are published on a quarterly basis, whereas economy is rebased every three years. The current GDP estimates are based on 2017 underpinned by several larger surveys and census to produce the Supply Use Table (SUT). Published data are aggregated to the highest level (ISIC.1) except for Agriculture and Manufacturing that include data on sub-sectors (ISIC.2). In total, 31 sub-sectors are included. At the survey level, data are captured at the 4-digit level but often published at more aggregated levels.

The National Institute of statistics Rwanda has accurately documented how the National Account are estimated. The core challenge to producing rapid and reliable figures is the large informal sector. Thus, while good indications of trends may be obtained for the formal sector, it is necessary to collect a substantial amount of field data and rely on assumption ad rough estimates for the rest.

Between base-years, indicators based largely on administrative records are used to extrapolate the benchmark. Quarterly and annual estimates of GDP and the activity components are compiled using the production approach which essentially is to measure the value of total output subtracted by the cost of inputs (intermediate consumption) to obtain the Gross-Value Added. At constant prices, the quarterly estimates of activity are essentially the equivalent of Indices of Production covering all types of activity in the economy. Quarterly and annual estimates rely on statistical surveys to a lesser extent than the base years apart from prices, which are captured monthly.

On the other hand, in recent years, surveys have been introduced to inform the production indices to an increasing extent providing more information on the informal economy. Namely data on businesses figures (IBES since 2017), employment (Labor Force Survey since 2017), and agricultural production (Seasonal Agricultural Survey since 2014). Anonymized micro-data are published, which enables a more disaggregated analysis geographically and by sub-sector.

Table 1: Key Data Sources

Administrative Data	**Frequency**	**Source**
VAT/revenue related taxes	Monthly	RRA
CIT	Annual	RRA
PAYE	Quarterly	RRA
Imports CIF, import duty and VAT, exports FOB	Monthly	RRA (Customs)
Tourism data	Monthly	RDB
Balance of payments: detailed services (and goods, for comparison)	Monthly	BNR
Survey	**Frequency**	**Last data point**
Integrated Household Living Conditions Survey	Every 3 years	2017
Rwanda Establishment Census	Every 3 years	2017
Demographic and Health Survey	App. Every 5 years	2014
Cross Border Trade Survey	App every 5 years	2020
Foreign Private Capital Census	Annual	2019
Labor Force Survey	Annual with quarterly sub-reports	2020
National Population and Housing Census	Every 10 years	2012
Integrated Business Enterprise Survey	App. Every second years	2018
Seasonal Agricultural Survey	3 times per year (every season)	2020

For the BEVT, the key economic indicators to capture are the GVA, the number of jobs by gender, and wages deriving from BE related activities. The main source for the GVA is the National Account Estimates provided on a quarterly basis and rebased every 3 years. For number of jobs and wages, the Labor Force Survey conducted on a quarterly basis is the most relevant.

Rwanda's Third Strategy for Development of Statistics (2019/20-23/24) does not include a Sector Statistical Plan for the Blue Economy among the 15 sectors identified for statistical reporting. The economic and social aspects would be captured in the as a core service in Pillar I of the Strategy as well as the Sector Statistical Plans for Agriculture and Private Sector Development & Youth Employment (PSDYE), and for Social Protection. The ecosystem would be covered in the Sector Strategic Plan for Environment & Natural Resources (ENR). However, without the BE focus, the key challenge is to disentangle the Blue Economy aspect across the data captured. This report provides more details on that below.

Table 2 below indicates the GVA by sector. The sectors indicated in blue are relevant for the blue economy. Rwanda's GDP in 2019 is estimated at RWF 9,105 billion, which is equivalent to USD10.1 billion. The main sectors with direct relevance to the blue economy are Fishing, Food processing,

Electricity, Water and Waste Management, Trade, Transport Services, and Hotels&Restaurants. Whereas Fishing is solely a Blue Economy sector, the remaining are of a hybrid nature and is subject to assumptions.

Table 2: Rwanda GDP by Economic Activity - GVA by sector (NISR, National Accounts)

Activity description	ISIC4	2014	2015	2016	2017	2018	2019	BE component assumtion
GROSS DOMESTIC PRODUCT (GDP)		**5,645**	**6,178**	**6,876**	**7,694**	**8,291**	**9,105**	
AGRICULTURE, FORESTRY & FISHING	**A**	**1,388**	**1,475**	**1,722**	**2,027**	**2,043**	**2,191**	
Food crops	AA	824	874	1,065	1,297	1,156	1,244	
Export crops	AB	87	89	106	138	138	115	
Livestock & livestock products	AC	129	144	166	186	212	253	
Forestry	AD	327	343	360	378	504	545	
Fishing	AE	22	25	26	29	33	34	100% BE
INDUSTRY	**B-F**	**1,001**	**1,090**	**1,171**	**1,330**	**1,429**	**1,639**	
Mining & quarrying	B	119	106	111	165	185	132	
TOTAL MANUFACTURING	**C**	**389**	**429**	**469**	**591**	**626**	**746**	
Of which: Food	*CA*	*106*	*110*	*125*	*210*	*185*	*239*	*5% BE*
Beverages & tobacco	*CB*	*123*	*131*	*140*	*159*	*175*	*184*	*50% - largest producer is on Lake Kivu using its water*
Textiles, clothing & leather goods	*CC*	*22*	*23*	*25*	*34*	*59*	*70*	
Wood & paper; printing	*CD*	*21*	*25*	*29*	*26*	*27*	*32*	
Chemicals, rubber & plastic products	*CE*	*26*	*28*	*30*	*34*	*39*	*57*	
Non-metallic mineral products	*CF*	*22*	*26*	*31*	*34*	*34*	*42*	
Metal products, machinery & equipment	*CG*	*23*	*32*	*37*	*32*	*34*	*44*	
Furniture & other manufacturing	*CH*	*47*	*55*	*52*	*61*	*72*	*79*	
Electricity	D	45	55	77	84	87	87	57% - % MW generated from hydro and Methane from Kivu
Water & waste management	E	26	28	32	32	33	54	
Construction	F	421	473	483	458	497	620	
SERVICES	**G-T**	**2,776**	**3,070**	**3,386**	**3,684**	**4,128**	**4,486**	
TRADE &TRANSPORT	**G-H**	**756**	**825**	**899**	**992**	**1,218**	**1,378**	
Maintenance and repair of motor vehicles	GA	31	33	38	40	44	49	
Wholesale & retail trade	GB	482	529	560	597	706	771	18% - share of population in 5 Kivu Districts
Transport services	H	242	263	301	355	467	558	
OTHER SERVICES	**I-T**	**2,020**	**2,245**	**2,487**	**2,692**	**2,910**	**3,108**	
Hotels & restaurants	I	119	134	155	140	157	147	13.5% - share of Jobs in Establishments in the 5 Kivu Districts
Information & communication	J	127	145	148	134	148	183	
Financial services	K	145	159	164	191	206	225	
Real estate activities	L	401	430	488	560	607	647	

Professional, scientific, and technical activities	M	109	128	144	163	181	203	
Administrative and support service activities	N	182	217	252	277	292	312	
Public administration and defence; compulsory social security	O	331	359	418	446	488	526	
Education	P	204	208	220	231	240	246	
Human health and social work activities	Q	130	134	137	160	154	150	
Cultural, domestic & other services	R-T	271	330	362	391	437	468	
TAXES LESS SUBSIDIES ON PRODUCTS		**480**	**543**	**597**	**654**	**692**	**789**	
Source: *National Institute of Statistics of Rwanda. March 23, 2020*								

Table 3 shows employment and wage data from the quarterly Labor Force Survey. As for the GVA figures, the sectoral accuracy is a gap. Furthermore, data on wages are likely underestimated since they are collected in a survey setting.

Table 3: Wage and Employment Data (NIST, Labor Force Survey)

Sector	Mean Income RWF/month	Total employees	Male	Female	Note
Agriculture forestry and fishing	16,800	1,265,361	573,968	691,393	This figure excludes subsistence. Will be added. Fishery job to be estimated in proportion of the sub-sector contribution to sector GVA
Mining and quarrying	34,010	62,563	58,931	3,631	
Manufacturing	33,217	205,301	114,427	90,874	Agro-processing and beverage jobs in proportion their sub-sector contribution to sector GVA
Electricity gas stream and air condition	249,084	6,301	5,187	1,114	BE estimated as proportion of Hydro & Methane MW contribution to total
Water supply, gas, and remediation services	80,281	7,862	4,838	3,024	BE estiamated as 100%
Construction	64,963	322,117	275,005	47,113	
Wholesale and retail trade; repair of	19,694	477,164	232,142	245,022	BE estimated as % population share in the 5 Kivu Districts
Transportationa and storage	49,341	140,339	136,109	4,230	
Accommodation and food services activity	52,978	69,289	36,691	32,598	BE estimated as % jobs in the 5 Kivu Districts
Information and communication	176,672	13,669	10,182	3,487	
Financial and insurance activities	297,113	28,815	14,438	14,378	
Real estate activities	70,647	3,710	3,083	627	
Professional, scientific and technical	236,840	25,127	17,314	7,813	
Administrative and support activities	76,290	51,814	33,799	18,015	

Public administration and defence; comp	248,608	60,489	44,876	15,613	
Education	118,061	106,339	57,787	48,552	
Human health and social work activities	208,309	49,072	22,601	26,471	
Arts, entertainment and recreation	101,885	9,620	6,276	3,344	
Other services	36,249	66,321	46,504	19,818	
Activities of house13holds as employers	19,968	218,279	97,250	121,029	
Activities of extraterritorial organiza	435,595	17,784	11,222	6,563	
Total	**51,358**	**3,207,336**	1,802,628	1,404,708	

4.2 Analysis of Economic Data inputs to the Toolkit

Table 4 summarizes the data going into the toolkit. GVA is derived from the National Accounts while wages and employment are from the Labor Force Survey. Critical assumptions are made on how much of economic activity is related to the Blue Economy. More on this below.

Table 4: Summary on Analysis of Economic Data

Activity description	ISIC4	BE component assumption	GVA 2019 RWF Billion	Mean Income RWF/year	Total employees	Male	Female	Note
Total economy			**9,105**	**616,296**	**3,207,336**	**1,802,628**	**1,404,708**	
Fishing	AE	100% BE	34	201,600	45,296	20,830	24,466	This figure excludes subsistence. Will be added. Fishery job to be estimated in proportion of the sub-sector contribution to sector GVA
Manufacturing of food	*CA*	*5% BE*	*239*	398,604	65,773	36,660	29,114	Agro-processing and beverage jobs in proportion their sub-sector contribution to sector GVA
Manufacturing of Beverages & tobacco	*CB*	*20% - largest producer is on Lake Kivu using its water*	*184*	398,604	50,637	28,223	22,414	
Electricity	D	57% - % MW generated from hydro and Methane from Kivu	87	2,989,008	6,301	5,187	1,114	BE estimated as proportion of Hydro & Methane MW contribution to total
Water & waste management	E	100% BE	54	963,372	7,862	4,838	3,024	BE estimated as 100%
Wholesale & retail trade	GB	6% - equivalent to third of population in 5 Kivu Districts	771	236,328	477,164	232,142	245,022	BE estimated as % population share in the 5 Kivu Districts
Transport services	H		558	592,092	140,339	136,109	4,230	
Hotels & restaurants	I	7% - half of the jobs in Establishments in the 5 Kivu Districts	147	635,736	69,289	36,691	32,598	BE estimated as % jobs in the 5 Kivu Districts

Fisheries: contribute RWF 34 bn (USD38 million) to the economy, which is roughly 0.4% of GDP. According to Rwanda Agriculture Board production was 26,732 MT in (2015) of which capture fisheries was 25,159 MT and aquaculture 1,573 MT. Jobs and wages are not reported specifically for Fisheries in the Labor Force Survey – only for Agriculture, Forestry, and Fisheries as a whole. Therefore, we derive figures from Fisheries by their share of Agriculture GVA. Total employment in agriculture is estimated 2.9 million of which 1.3 million are male and 1.6 million are female. Fisheries sector is 1.6% of the

Agricultural, Forrest, and Fisheries sector, so we estimate employment to be 45 thousand. Average annual wages in the sector are RWF201,600 (2018), so the total wages are RWF9.1bn Anecdotal evidence suggest that the fishery sector mainly generates jobs for males. However, lacking statistics in this, we have estimated the gender distribution to be equivalent to the sector as a whole.

Food processing and beverages is the main manufacturing sector in the country and contribute RWF 423 bn which is 4.6% of GDP. Processing of fish is informal and is negligible. On the other hand, agro-processing relies on agricultural raw materials produced in wetlands, so we estimate the sector to be at least 5% reliant on the Blue Economy. The beverages sector of RWF 184 bn is primarily value addition to fresh water as well as agricultural produce from wetlands. The largest producer of beer in located on the Lake Kivu for the same reason. We therefore estimate 20% of the beverages sector being related to the Blue Economy.

Electricity: The Electricity Sector contributes RWF 87bn which is about 0.6% and 5,000 jobs. Total installed capacity is capacity 218 MW of which hydroelectric is 98 MW. Furthermore, energy from Methane extraction at Lake Kivu is currently at 30 MW installed, hence Blue Economy contribution is 128 MW/57% of total installed capacity, leaving Blue Economy contribution at RWF 50 bn and about 6,300 jobs of which the majority are men. Wages are relatively high in the sector as it is capital intensive. Whereas the hydropower potential is close to its potential, methane resources at Kivu has been estimated to as much as 500 MW of electricity over 50 years (contingent on technology used).

Water and waste management constitutes RWF 54bn (0.6% of GDP) and 7,862 jobs (0.1%). The water sector adds value to fresh water, hence directly dependent on the Blue Economy (100%). Moreover, most urban areas are near water bodies, so this sector is important for the marine ecology across the country and further up the Nile Basin.

Trade and transport: The trade sector is estimated to contribute RWF 771 bn (8%) to GDP and provide 559,000 jobs. The transport sector is estimated at RWF 558 bn (6%) and provide 117,000 jobs. In ISIC nomenclature trade and transport are reported as separate sectors, but in the Rwandan, they are closely interlinked given that the owner often transports goods. Most of the economic activity in this is generated in distribution of imported goods, whereas most jobs are in the aggregation ad distribution of domestically produced products. The Blue Economy share would be the trade and transport on Lake Kivu and the distribution and sales of fish from Lake Kivu. These are hard to measure with the currently available data but could arguably be approximated using the population share of the 5 Districts located on Lake Kivu which is about 18% of the total population according to the latest Census (2012) (Rubavu, Rutsiro, Karongi, Nyamasheke, and Rusizi). We estimate that a third of the trade in these districts take place around the lakes, so 6% of the total sector at national level.

Hotels & Restaurants: The total hotel and restaurant sector is RWF 147 bn (1.6%) and 36,000 jobs. The majority of this is urban and not linked to the Blue Economy. However, the Lake Kivu and other minor lakes are popular spots for tourism – especially domestic and regional. The Blue Economy component is difficult to estimate with existing data. EICV estimates on households deriving income from Food & Accommodation suggest the 5 Kivu districts take up about 13.5% which translates to about RWF 20bn and 4850 job. The Establishment Census estimates that 16% of jobs in Food&Accomomdation are generated in the 5 Kivu Districts, of which we suggest half would be on the lake (7%).

4.3 Blue Economy Valuation Toolkit Output on Economic Data

The following tables present the output of on the economic indicators. The toolkit converts values to present value USD. The hydropower production is the single most important economic activity related to the Blue Economy in terms of GVA and wages followed by manufacturing. On the other hand, the labor-intensive fishery and trade sectors dominate in terms of job creation. It should be noted that the agricultural production in wetlands is included in the valuation of ecosystems, hence it is not included here.

Table 5: Gross Value Added

Economic Activity by ISIC Section	GVA by sector generated by BE (USD)	as a % of Total GVA generated by BE
D - Electricity, gas, steam and air conditioning supply	50,947,010	20.46%
C - Manufacturing	45,460,883	18.25%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	43,519,164	17.47%
A - Agriculture, forestry and fishing	34,930,396	14.03%
E - Water supply; sewerage, waste management and remediation activities	33,903,031	13.61%
H - Transportation and storage	28,786,756	11.56%
I - Accommodation and food service activities	11,493,602	4.62%
Grand Total	**249,040,841**	

Table 6: Employment

Economic Activity by ISIC Section	Total Employment related to BE	Total Employement in Sector	as a % of Total Employement generated by BE
A - Agriculture, forestry and fishing	45,296	45,296	40.42%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	28,629	477,164	25.55%
C - Manufacturing	13,415	116,411	11.97%
H - Transportation and storage	8,420	140,339	7.51%
E - Water supply; sewerage, waste management and remediation activities	7,862	7,862	7.02%
I - Accommodation and food service activities	4,850	69,289	4.33%
D - Electricity, gas, steam and air conditioning supply	3,591	6,301	3.20%
Grand Total	**112,063**	**862,662**	**100.00%**

Table 7: Wages

Economic Activity by ISIC Section	Total BE Wages (USD)	as a % of Total Wages generated by BE
D - Electricity, gas, steam and air conditioning supply	11,028,997	22.52%
A - Agriculture, forestry and fishing	9,381,558	19.15%
E - Water supply; sewerage, waste management and remediation activities	7,781,291	15.89%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	6,951,183	14.19%
C - Manufacturing	5,494,049	11.22%
H - Transportation and storage	5,122,045	10.46%
I - Accommodation and food service activities	3,224,761	6.58%
Grand Total	**48,983,884**	**100.00%**

4.4 Remaining Data gaps on Economic Data

Although the economic data for Rwanda is relatively good, there are a few remaining data gaps to be considered: Firstly, the ISIC.2 sectoral break down is relatively aggregated, and breaking down the data into smaller categories is not entirely possible given that the SUT and the quarterly estimates use macro-data as well. Therefore, so the Blue Economy share of the sectors must be estimated by other less accurate means.

Secondly, estimates on jobs and wages rely on survey information due to high levels of informality. Data of this nature tend to be underreported among other as they are related to ta payments.

Thirdly, the total estimate does not take input-output (Leontief) multipliers into account. I.e., does not include the additional production in sectors that supply Blue Economy sectors (indirect multiplier), nor the increased demand from generally higher incomes in the economy (induced multiplier).

Finally, the Blue Economy arguably has a considerably larger indirect value than the estimate given its importance for all other sectors. For example, 57% of the energy sector enables the rest of the economy to generate tremendous economic value outside of the Blue Economy sectors.

5 The Ecosystems Dimension

Rwanda is densely populated with limited natural resources; hence they must be managed for sustainable use. This section reviews the available data, analyses the data to use as inputs to the Toolkit, presents the outputs of the toolkit followed by a discussion on remaining data gaps.

5.1 Review of Existing Data Sources

5.1.1 General Environmental data

A lot of relevant data relevant for the toolkit has emerged in recent years. The subsection considers general data environment under the Third Strategy for Development of Statistics (2019/20-23/24). Generally, the NISR have identified the below SWOT on collecting the environmental data. In summary, the main strength is emergence on the Land Information System (LAIS) and the capacity built around it at the MINILAF. His is the foundation for estimating the size of various ecosystems and their state. The weaknesses are mainly that there are overlapping and/or scattered mandates in data collection and data-handling. The Annex contains on planed indicators Environmental indicators planned to be collected until 2024. It shows data is to be collected and provided by a relatively wide and large group of institutions in the sector: RNRA, IWRM, MININFRA, MoE, MINAGRI, REMA and RLMU. This may be a challenge for the BEVT as well as an opportunity to be relevant. Whilst data collection for the toolkit is more challenging, the Toolkit can be used to enhance coordination between the various institutions.

Strengths	Weaknesses
1. Data platforms and information systems, including LAIS and the climate 'maproom', provide a strong foundation for improved data management. 2. Highly skilled IT unit at MINILAF provides strong statistical capacity for systems development. 3. Development of sector metadata and methods documentation provides a foundation for harmonised data governance and management. 4. SSP outlines an ambitious agenda to build up not only data governance	1. Low coordination across institutions engaged in data production. 2. Lack of a TWG with a specific focus on sector statistics hampers effective coordination and identification of data use cases. 3. Minimal standards for regular data publication or consistent analytical products. 4. Plans to restrict access to INRMIS reinforces data silos.

Opportunities	Threats
1. Development of an integrated MIS (INRMIS) creates opportunities to improve data integration and harmonise data management across the sector. 2. Existing SWG and TWGs provide networks for outreach and facilitate coordination. 3. Cross-cutting sector portfolio creates opportunities to increase broader NSS engagement	1. Uneven levels of statistical capacity (high in MINILAF, low elsewhere) may lead to uneven compliance with sector systems and standards. 2. Lack of publications and a closed MIS hampers data access and uptake, 3. Decline in external investment following the development of the INRMIS

5.1.2 Ecosystems Accounting

Most of Rwanda is hilly and densely populated – about 90% of cropland located on steep slopes. A rapidly growing rural population and urbanization reduces vegetation cover on the landscape due land transformation, crop farming and resource harvesting. This increases erosion of fertile soil and puts wetlands under pressure. Moreover, climate change is change rainfall patterns showing a greater variability in water supply, with elevated flooding, more frequent drought periods and declining water quality.

Table 8 indicates the development with cropland and human settlement doubling in the period 1990-2015, whereas wetlands water bodies, and forest cover are declining. Recent data form the National Land Use Master Plan 2020 indicate that Rivers constitute about 72 km^2, lakes about 1300 km^2, and wetlands about 2,068 km^2.

Table 8: Development in Land-cover types, 1990-2015

Key land cover types	Percentage of national cover in 1990	Percentage of national cover in 2015	Change in cover 1990 to 2015
Sparse Forest	37.1%	10.6%	-71.4%
Annual Cropland	24.2%	51.7%	113.6%
Water Body	6.1%	6.0%	-0.7%
Wetland	4.3%	3.5%	-18.9%
Dense Forest	3.3%	4.6%	37.6%
Moderate Forest	2.5%	1.9%	-24.9%
Urban &settlement	0.5%	1.4%	212.3%
Perennial Cropland	0.4%	1.3%	218.3%

The consequence of this development is that soil organic matter, clay and nutrients that are washed out into rivers create negative impacts such as high turbidity in rivers with elevated water purification costs and turbine erosion with elevated electricity generation costs, clay deposition leading to loss of dam storage space and elevated electricity generation costs, eutrophic (or excess nutrients) conditions leading to alien plant infestations and elevated water purification costs, and the loss of aquatic biodiversity due to sediments and eutrophication. Estimating the value of the wetlands will support planning for investing in protecting them. Table 9 is indication of the diversity of data needed for

assessing the state of the ecosystems. Rwanda plans for including the value of this decrease in value of the ecosystem in the national accounts.

Table 9: Data sources

Models	Dataset	Data source	Spatial resolution	Year	Data processing notes
All	Land cover	Regional Centre for Mapping Resources for Development (RCMRD) Scheme II land cover classification	30 m	1990, 2000, 2010, 2015	
Annual & seasonal water	Precipitation Rain Events	WorldClim Meteo Rwanda	30 arc second	1970-2000	
Annual & seasonal water	Reference evapotranspiration	Consultative Group on International Agricultural Research (CGIAR) Global Aridity and Potential Evapotranspiration database	30 arc second	1950-2000	
Annual water	Depth to root restricting layer	International Soil Reference and Information Centre (ISRIC) African SoilGrids 250 m	250 m	n/a	
Annual water	Plant available water fraction	ISRIC African SoilGrids 250 m	250 m	n/a	
Annual water (calibration)	2008-2012 precipitation data	East Anglia Climate Research Unit Climate Research Unit (CRU) TS v. 3.24.01	0.5 degree	2008-2012	Summed monthly totals to obtain annual value
Annual water (calibration)	Stream gage discharge data	Rwanda Water and Forestry Authority	Point data	1956-present, in selected locations	
Annual water	Depth to root restricting layer	ISRIC African: Soil Grids - Root zone depth	250 m	n/a	
Seasonal water	Ecoregions	World Wildlife Fund	Polygon data	n/a	
Annual water	Stream gage data for six watersheds in Rwanda	RWFA			
Seasonal water	Hydrologic soil group	ISRIC African SoilGrids 250 m	250 m	n/a	Based on soil texture

Seasonal water	Potential & actual evapotranspiration	Moderate Resolution Imaging Spectroradiometer (MODIS) MOD16 product	0.05 degree		Divided actual by potential ET to estimate K_c and compare
					with land cover
Seasonal water, Sediment delivery ratio (SDR)	Void-filled digital elevation model	Shuttle Radar Topography Mission	30 m	n/a	
SDR	Rainfall erosivity	Panagos et al. (2017)	30 arc arcseconds		
SDR	Soil erodibility	Derived from ISRIC African Soil Grids 250 m	250 m	n/a	Calculated according to Williams 1995

Data gaps: For the Ecosystems study the following data gaps were noted:

- Using observations between over a long period for various sources makes consistency a challenge. For example, the spatial resolution of some data sets was not high such as precipitation (1km) and soil grid dataset (250m) and some of the published data did not employ local field verification such as the soil erodibility factor.
- In some cases, locally available data, or estimates, necessary in model lookup tables, were not available. This required the use of estimates from regional studies, such as the curve number values for land cover and soils[2].
- Some data are relatively old or dated, such as a vegetation cover management factor estimated by Clay in the 1990's.
- In addition, soil conservation work such as progressive and radical terraces, have not be broadly mapped.

5.1.3 Water accounting

Being landlocked, the main indicator for the Blue Economy is supply and use of water resources. Water accounting is not included in the current toolkit as most countries do not collect this data. However, it is included in this review for future inspiration. The approach in Water Accounting is like that of national accounting: A Supply Use Table is constructed to show the sources of water (Baseflows) and the water use by economic sector, by catchment area, and by district. Hence, it can be shown whether the stock of water is increasing or deteriorating, and trend forecasts be applied in national planning. Data for water yields and use is available from the period 1990 to 2015.

[2] Baker, T.J., and S.N. Miller. 2013. Using the Soil and Water Assessment Tool (SWAT) to assess land use impact on water resources in an East African watershed. Journal of Hydrology 486:100-111.

The closing stock of water in 2015 was 323,247 million m^3 of which 79% was in lakes and 19% was ground water. The total water stock reduced by 0.13% during the 2015. Agriculture is by far the largest net consumer of water resources (Table 10).

Table 10: Sectoral uses of water

	Total water use	for own use	for distribution	Supplied from other sectors	Total water supply	Net consumption
Agriculture, forestry and fishing	13,936,838	13,846,588	-	90,250	1,557,982	12,378,856
Mining and Quarrying	22,450	22,450	-	-	21,382	1,068
Manufacturing	667,316	24,466	86	642,764	515,516	151,799
Electricity, gas	368,458	368,458	-	-	350,035	18,423
Water supply	53,808	3,213	50,595	-	2,570	51,238
Accommodation	16,673	-	-	16,673	12,972	3,700
Banking and insurance	76	-	-	76	62	14
Education	224,505	133	-	224,372	179,498	45,008
Human health and social work	4,310	589	-	3,721	3,448	862
Other services	144	12	-	132	11	133
Total production activities	15,294,577	14,265,909	50,681	977,987	2,643,476	12,651,100
Household	41,035	41,035	-	176,061	82,781	134,315
Organisations and bodies	-	-	-	6,515	5,212	1,303
Rest of the world	-	-	-	-		
Total	15,335,612	14,306,944	50,681	1,160,563	2,731,469	12,786,717

Key data gaps and issues in water accounting. During NCA development a few challenges had been identified:

1. The data on water assets, supply, and use, is scattered among a range of agencies, ministries, and knowledge institutions. The underlying issue is that mandates on water use and water resources are overlapping between institutions.
2. Ground and soil water are not available in a system or database, because they are not regularly measured and monitored. For this reason, the water accounts are populated by estimation, using international literature sources or research available in Rwanda. Improving this data and estimates will be a longer-term investment
3. Continued need for training of NISR and NCA staff to update the time series.
4. Technology capacity. The RWFA and other related water agencies have sufficient data storage capacity, but there is some question about the ability to regularly update and maintain databases**.**

5.2 Analysis of Ecosystems Data

Table 11 summarizes the key data inputs to the toolkit. Rwanda has three main types of Blue Economy ecosystems: Rivers/streams, lakes, and wetlands. The key inputs needed to the toolkit is their respective surface areas, the level of degradation, and the value of their function per surface area. The surface area is obtained from the Land Use Masterplan 2020, and from Rwanda's National Determined Contribution

2020 document under the Paris Declaration. Ecosystem quality on the lakes and rivers is a guestimate. The lakes are subject to overfishing and activities on the lakes rendering them in a non-pristine condition. However, beyond this there is limited damage, so we estimate the quality at 80%. Similarly, rivers get an 80% estimate as they are subject to pollution from cities and washing out soil from eroded slopes. These estimates could be improved upon with further research. As for wetlands, there is a study available: Albertine Rift Conservation Society (ARCOS Network, 2020, "Wetlands Biodiversity and Ecological Integrity Assessment", which finds that over 40% of wetlands in Rwanda have lost their pristine nature, hence the 60% estimate.

Valuation per km2 relies in secondary literature. For Wetlands, a study from 2019[3], indicates that the total value per km2 in the large Akagera wetlands in Kirehe/Kayonza districts is $82,600 per year. This includes the direct use value: irrigation, agriculture production, water supply to households, and other productive use of the wetlands (bricks, papyrus). It also includes indirect use value such as carbon sequestration, sediment retention, and flood attenuation. The estimate does not include the non-use/existence value. For rivers and lakes, we did not find studies from Rwanda. We use estimates from n Schuijt, 2002, "Land and Water Use of Wetlands in Africa: Economic Values of African Wetlands" which have estimates in the value of Lake Chilva in Malawi. We convert to present values and account for differences in GDP per capita in Malawi 2002 and Rwanda 2020. While this is a start, accuracy can be improved upon with more studies on the value of Rwanda's Lakes and rivers.

Table 11: Estimated Value of Ecosystems

Ecosystem Classification Class	Ecosystem estimated size km2	Quality of the Ecosystem (<30%= heavily damaged, 100%=pristine)	Estimated unit value of ecosystem service km2 in USD	Estimated total value of the ecosystem service in selected currency
Rivers, streas	72.6	80%	17,434	1,265,725
Permanent Freshwater Lakes	1,300	80%	17,434	22,664,490
Wetlands (Bogs, Marshes, Swamps, Fens, Peatlands)	2,068	60%	82,600	170,816,800

5.3 Blue Economy Valuation Toolkit Data Outputs

Table 12 shows the Blue Economy outputs. The total economic value of Blue Economy ecosystems in Rwanda s about $187 million. Wetlands constitute about 83% of this given their size and the high value. They main provide service value from providing irrigation, carbon sequestration, and thirdly by attenuating the impact of floods. There are limited studies available on the value of rivers and lakes. The river value is arguable underestimated in that the value of hydropower production is covered under the economic indicators.

[3] REMA, 2019, "Economic Assessment of Akagera Wetland Complex: Identifying Finance Solutions for Improved Management"

Table 12: Summary of Blue Economy outputs

Ecosystem Classification/ Service	Estimated value of Ecosystem service	Ecosystem Service Contribution to the overall
2 - Wetlands (Inland)	**186,968,088**	**100.0%**
2.01 - Permanent Rivers, Streams, Creeks	**1,391,295**	**0.7%**
2.04 - Bogs, Marshes, Swamps, Fens, Peatlands	**160,663,791**	**85.9%**
2.05 - Permanent Freshwater Lakes	**24,913,002**	**13.3%**
Grand Total	**186,968,088**	**100.0%**

5.4 Remaining Data Gaps on Ecosystem Valuation Data

Data on surface area and use of the ecosystems is relatively developed. However, there are critical gaps in estimating the current state of the ecosystems and their economic value. Studies have been conducted on the wetlands. However, it is to be seen whether the findings from Akagera Wetlands generalize to other wetland areas of the country. Moreover, data on the lakes and rivers seem non-existing. More studies will be needed to assess the state of the Lake Kivu and others and to estimate the economic value per square km.

6 Social Indicators

6.1 Data findings

The Blue Economy has impact on several social indicators, especially regarding human development indicators and several indicators related to poverty. The man data sources for this component are international registries that allows for cross country comparisons. Based on the comparison with other countries, an index value is constructed for each indicator. In turn, a composite index value is constructed for the country to compare with others. As indicated in Table 14 Rwanda's resulting Composite Social Index value is 23.82.

Table 13: Social Indicators

Social Sustainability Data for Rwanda

NDX	Social Category	Social Dimension	Social Indicator	Social Aspect Description	Data Year	Data Source	Data Quality	prefetched Social Indicator Value (Index)	Social Indicator Adjustment for BE (%)	Social indicator Gauge for BE
C11	C- Corruption	C1 - Government	C11 - Corruption Perception Index (CPI)	Corruption Perception Index (CPI)	2019	Transparency Internationale. (2020). Corruption Perceptions Index (CPI) 2019	reliable	53.00	100%	53.00
H11	H - Human Development & Ine	H1 - Human Development	H11 - Human Development Index (HDI)	Human Development Index (HDI)	2018	UNDP (2019). Human Development Data (1990-2018)	reliable	53.60	100%	53.60
H12	H - Human Development & Ine	H1 - Human Development	H12 - Gender Development Index (GDI)	Gender Development Index (GDI)	2018	UNDP (2019). Human Development Data (1990-2018)	reliable	94.30	100%	94.30
H13	H - Human Development & Ine	H1 - Human Development	H13 - Youth unemployment rate (% youth pop)	Youth unemployment rate (% youth pop)	2018	UNDEP, Human Development Data (1990-2018)	reliable	1.60	100%	1.60
H14	H - Human Development & Ine	H1 - Human Development	H14 - Overall unemployment rate (% Pop)	Overall unemployment rate (% Pop)	2018	UNDEP, Human Development Data (1990-2018)	reliable	1.00	100%	1.00
H15	H - Human Development & Ine	H1 - Human Development	H15 - Overall unemployment rate (female to male ratio)	Overall unemployment rate (female to male ratio)	2018	UNDEP, Human Development Data (1990-2018)	reliable	1.67	100%	1.67
H21	H - Human Development & Ine	H2 - Human Inequality	H21 - Inequality-adjusted Human Development Index (IHDI)	Inequality-adjusted Human Development Index (IHDI)	2018	UNDP (2019). Human Development Data (1990-2018)	reliable	38.20	100%	38.20
H22	H - Human Development & Ine	H2 - Human Inequality	H22 - Gender Inequality Index	Gender Inequality Index (GII)	2018	UNDP (2019). Human Development Data (1990-2018)	reliable	41.20	100%	41.20
H23	H - Human Development & Ine	H2 - Human Inequality	H23 - Gini coefficient	Gini coefficient	2017	UNDEP, Human Development Data (1990-2018)	reliable	43.70	100%	43.70
H24	H - Human Development & Ine	H2 - Human Inequality	H24 - Child labour (% ages 5-14)	Child labour (% ages 5-14)	2017	UNDEP, Human Development Data (1990-2018)	reliable	19.00	100%	19.00
P23	P - Poverty, Nutrition, Educatio	P2 - Education	P23 - Literacy index	Literacy index	2018	UNDEP, Human Development Data (1990-2018)	reliable	0.46	100%	0.46
P24	P - Poverty, Nutrition, Educatio	P2 - Education	P24 - Education Index	Education Index	2018	UNDEP, Human Development Data (1990-2018)	reliable	0.46	100%	0.46
P25	P - Poverty, Nutrition, Educatio	P2 - Education	P25 - Inequality Adjusted Education Index	Inequality Adjusted Education Index	2018	UNDEP, Human Development Data (1990-2018)	reliable	0.32	100%	0.32
P26	P - Poverty, Nutrition, Educatio	P2 - Education	P26 - Mean years of schooling, female (years)	Mean years of schooling, female (years)	2018	UNDEP, Human Development Data (1990-2018)	reliable	3.90	100%	3.90
P27	P - Poverty, Nutrition, Educatio	P2 - Education	P27 - Mean years of schooling, male (years)	Mean years of schooling, male (years)	2018	UNDEP, Human Development Data (1990-2018)	reliable	4.90	100%	4.90
P11	P - Poverty, Nutrition, Educatio	P1 - Living standards	P11 - Multidimensional Poverty Index (MPI)	Percentage of the population that is multidimensionally poor adjusted by the intensity of the deprivations.	2019	UNDP (2019). Multidimensional Poverty Index (MPI)	reliable	25.87	100%	25.87
P12	P - Poverty, Nutrition, Educatio	P1 - Living standards	P12 - Fish, seafood supply quantity (kg/capita/yr)	Fish, seafood supply quantity (kg/capita/yr)	2017	FAO Food Balance	reliable	7.66	100%	7.66

Table 14: Toolkit output on Social Indicators

DataYear	(All)

Social category/dimension/ indicator	Social Indicator value (%)
C - Corruption	53.00
C1 - Government	53.00
C11 - Corruption Perception Index (CPI)	53.00
H - Human Development & Inequality	32.70
H2 - Human Inequality	35.53
H21 - Inequality-adjusted Human Development	38.20
H22 - Gender Inequality Index	41.20
H23 - Gini coefficient	43.70
H24 - Child labour (% ages 5-14)	19.00
H1 - Human Development	30.43
H11 - Human Development Index (HDI)	53.60
H12 - Gender Development Index (GDI)	94.30
H13 - Youth unemployment rate (% youth pop)	1.60
H14 - Overall unemployment rate (% Pop)	1.00
H15 - Overall unemployment rate (female to m	1.67
P - Poverty, Nutrition, Education	2.01
P2 - Education	2.01
P23 - Literacy index	0.46
P24 - Education Index	0.46
P25 - Inequality Adjusted Education Index	0.32
P26 - Mean years of schooling, female (years)	3.90
P27 - Mean years of schooling, male (years)	4.90
Composite Social Index value	**23.82**

6.2 Remaining data gaps on social indicators

Using international data sources has the advantage that comparison between countries is relatively simple. However, it is crucial to be able to determine how communities depend specifically on the Blu Economy ecosystems, and how the social indicators would change because of deteriorating ecosystems. Considerably more data will be needed – preferably at the household level – to determine how communities rely on the blue economy for their livelihoods and wellbeing. This would require additional data collection and analysis. Key existing sources would be the Household Survey (EICV), DHS, and CFSVA. Moreover, primary data collection would likely be needed to fill the gaps in the official datasets.

7 Recommendations for Rwanda

In Rwanda, environmental protection and Green Economy is high on the policy agenda although the Blue Economy is not a widely known concept in the land-locked country. However, climate change and the growing pressure on water resources from a growing population will make the BE more pertinent. The toolkit can be a valuable basis for planning and collaboration between institutions. Specially to assess and track the status on the Blue Economy ecosystems and to compile and compare findings from the various environmental studies on wetlands, lakes, and rivers. It can be a reference point to facilitate collaboration between various institutions with overlapping/scattered mandates in the area. However, given that the concept is little known in Rwanda, it will need to be further explained what it entails: namely, rivers, lakes, and wetlands, and it may consider enhancing its relevance in Rwanda to include the entire green economy as well.

This document provides an almost exhaustive account of economic data sources because the National Institute of Statics produce elaborate data on the economy. As for the quality of data inputs, Rwanda has a relatively strong general national statistics framework with high quality surveys and census for economic data. The primary data-gap on the economic side is to determine how significant the Blue Economy component is to the sector.

On the other hand, further work needs to go into defining what social indicators as well as improving estimates on economic value of ecosystems. On social indicators, the critical aspect to cover is to assess how communities depend on the ecosystems and to project the social impact of their deprivation. This would require access and further analysis of the raw data of various surveys and likely also some primary data collection. As for ecosystems assessments, the toolkit would be a repository for future studies on specific ecosystems, to improve estimates and to provide a guideline for further research.

For the toolkit to be used and updated, it will be critical to establish collaboration with a custodian of the toolkit. The most likely candidate for this is Rwanda Environmental Monitoring Agency, which has a broad mandate in this topic area. The National Institute of Statistics would be another option, but their focus is the Economic/Social data and he National Accounts rather than monitoring the complex aspects of economic and social life in and around the Blue Economy eco-systems. NISR publishes good data – especially on Socioeconomic aspects and would therefore be a relevant partner. But likely not the main custodian. A third option is the Water Resource Management Department under Ministry of the Environment. Their core mandate is water. On the other hand, it is a relatively smaller department with narrow mandate compared to REMA.

The proposed next step is to refine he toolkit slightly more and subsequently promote it to either REMA or the Water Resource Management Department. Given that the Blue Economy is not currently a priority, a few of the current deficiencies in the system, should be addressed before taking it forward, so that the preferred custodian will immediately see the benefits of the toolkit.

8 Annex – Planned Indicators in BE related areas under the 3rd Statistics Strategic Plan

Environment and Natural Resources									
No	Indicator	Agenda					Data source	Frequency	Responsible Institution
		SDG	AU2063	EAC2050	NST1	SSP			
1	Proportion of total adult population with secure tenure rights to land, with legally recognised documentation and who perceive their rights to land as secure, by sex and by type of tenure	1	0	0	0	0	Land Administration Information System (LAIS)	Annual	RNRA
2	Proportion of bodies of water with good ambient water quality	1	0	0	0	0	Water Quality Monitoring in Rwanda I, II & III	Annual	IWRM
3	Change in water-use efficiency over time	1	0	0	0	0	MININFRA Records	Annual	MININFRA
4	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	1	0	0	0	0	MININFRA Records	Annual	MININFRA
5	Degree of integrated water resources management implementation (0-100)	1	0	0	0	0	Records of MINIREMA; Consistency analysis for IWRM; pilot survey	Annual	MoE
6	Proportion of transboundary basin area with an operational arrangement for water cooperation	1	0	0	0	0	Nile Basin Initiative; Congo Basin	Annual	MoE
7	Change in the extent of water-related ecosystems over time	1	0	0	0	0	Rwanda State of the environment Report	Annual	RWFA
8	CO2 emission per unit of value added	1	0	0	1	0	(TNC) report on Climate Change	Annual	MoE
9	Ratio of land consumption rate to population growth rate.	1	0	0	0	0	Admin	Annual	RNRA
10	Annual mean levels of fine particulate matter in cities	1	0	0	0	0	MoE Reports	Annual	MoE
11	Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement	1	0	0	0	0	MoE Reports	Annual	MoE
12	Progress by countries in the degree of implementation of international instruments aiming to combat illegal, unreported, and unregulated fishing	1	0	0	0	0	MINAGRI	Annual	MINAGRI
13	Progress by countries in the degree of application of a legal/regulatory/policy/institutional framework which recognises and protects access rights for small-scale fisheries	1	0	0	0	0	MINAGRI/RAB Records	Annual	MINAGRI, RAB
14	Forest coverage of total surface areas	1	0	0	1	1	Records of MINRENA, Rwanda State of	Annual	MoE

							Environment and outlook Report		
15	Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	1	0	0	0	0	National Biodiversity Strategies and Action Plans (NBSAPs)	Annual	MoE
16	Progress towards sustainable forest management	1	0	0	0	0	District forest management plan; Forest management strat	Annual	RWFA
17	Proportion of land that is degraded over total land area	1	0	0	0	0	RNRA Reports	Annual	RNRA
18	Coverage by protected areas of important sites for mountain biodiversity	1	0	0	0	0	RNRA Reports	Annual	RNRA
19	Proportion of waste recycled	0	1	0	0	0	Adm/Specific survey	Annual	REMA
20	% of agricultural land placed under sustainable land management practice	0	1	0	0	0	Admin	Annually	REMA
21	a) % of terrestrial and inland water areas preserved; b) % of coastal and marine areas preserved	0	1	0	0	0	Admin	Annually	RLMU
22	Proportion of national parks and protected areas managed based on master and national plan	0	1	0	0	0	Admin	Annually	RDB
23	% of water demand satisfaction	0	1	0	0	0	Admin	Annually	RNRA
24	% in water productivity used in rain-fed agriculture and irrigation	0	1	0	0	0	Admin	Annually	RNRA
25	% of rainwater harvested for productive use	0	1	0	0	0	Admin	Annually	RNRA
26	% of farmers, pastoralist and fisher folks practicing climate resilient production systems	0	1	0	0	0	Admin	Annually	REMA
27	Levels of emissions arising from agriculture bio-diversity loss, land use and deforestation	0	1	0	0	0	Admin	Annually	RAB
28	Number of Cities meeting the WHO's Ambient Air Quality Standards (AAQS)	0	1	0	0	0	Admin	Annually	REMA
29	The level of satisfaction of local authorities on the share of the exploitation of natural resources for the benefit of all.	0	1	0	0	0	Admin	Annually	RGB
	The proportion of revenue generated from exploitation of natural resources retained in the local communities.	0	1	0	0	0	Admin	Annually	RGB
30	Value of mineral exports per annum	0	0	0	1	0	RMB Reports	Annually	RMPGB
31	% of public forest plantation allocated to private operators	0	0	0	1	0	RWFA reports	Annually	RWFA
32	Number of ha of land under agro forestry	0	0	0	0	1	RWFA report /Ground survey	Annually	RWFA
33	% of public forest plantations allocated to private women and men operators	0	0	0	0	1	RWFA report/Contracts/ MoU	Annually	RWFA
34	Number of ha of small natural forests under participatory management	0	0	0	0	1	RWFA reports /MoUs	Annually	RWFA
35	% of improved seeds provided to women and men farmers	0	0	0	0	1	RWFA reports	Annually	RWFA
36	% of charcoal produced by certified "green charcoal" of women and men's companies and cooperatives	0	0	0	0	1	MINILAF and RWFA reports	Annually	MoE

37	Number of Ha of degraded forests rehabilitated	0	0	0	0	1	RWFA reports	Annually	RWFA
38	Renewable water resources availability per capita per annum (m3/capita/annum	0	0	0	0	1	WRM reports	Annually	WRM
39	% of catchments with management committees Task Forces of women and men	0	0	0	0	1	WRM reports	Annually	WRM
40	Number of shared basins/catchments with cooperation frameworks	0	0	0	0	1	WRM reports	Annually	WRM
41	Percentage of implementation of approved catchment management plans	0	0	0	0	1	WRM reports	Annually	WRM
42	Percentage of degraded areas in 4 priority catchments rehabilitated	0	0	0	0	1	Reports from WRMD/REMA /MINAGRI/ FONERWA and Districts	Annually	REMA, MINAGRI, FONERWA
43	Percentage of water bodies with ambient water quality	0	0	0	0	1	WRM/ REMA/ WASAC reports	Annually	WRM
44	Percentage of Floods control investment measures implemented	0	0	0	0	1	WRM reports	Annually	WRM
45	% of women and men water users with water permits	0	0	0	0	1	WRM reports	Annually	WRM
46	Artificial water storage per capita	0	0	0	0	1	WRM reports	Annually	WRM
47	Proportion of households with RWH systems	0	0	0	0	1	EICV, National census	3 years	NISR
48	Number of Sector and district land plans (Cumulatively) integrated into a paperless Land register	0	0	0	0	1	LAIS	Annually	RNRA
49	% of Land use plan harmonised with NLUDMP	0	0	0	0	1	DLUP, LUDP, CoK harmonised	Annually	DLUP
50	Number of administrative entities with annual reference prices and market value integrated	0	0	0	0	1	LAIS	Annually	RNRA
51	% of compliance of land use development plans to the NLUDMP	0	0	0	0	1	Assessment report on district land use master plan	Annually	RNRA
52	% of agriculture and premium land protected	0	0	0	0	1	Assessment report on district land use master plan	Annually	RNRA, Districts
53	% of increased coverage in surveying and mapping	0	0	0	0	1	CORS Rwanda geo net platform	Annually	CORS Rwanda
54	% of National Spatial Data Infrastructure established and operational	0	0	0	0	1	NSDI platform in place	Annually	NSDI
55	Number of weather and climate products and services produced and disseminated by type of channel	0	0	0	0	1	QMS Audit report	Annually	QMS
56	% of occurred extreme weather events for which advance warning was provided at least 30 min in advance	0	0	0	0	1	Feedback for various platforms and internal forecast verification	Annually	METEO RWANDA, RNRA

57	% of polled women and men users of weather & climate information from Meteo Rwanda who are satisfied or very satisfied with the service	0	0	0	0	1		Annual sector Satisfaction report	METEO RWANDA, RNRA
58	% of demand of Meteo Rwanda weather data by channels	0	0	0	0	1	Climate Data requests served	Annually	METEO RWANDA, RNRA
59	% of forecasts by level of accuracy	0	0	0	0	1	Forecast verification report	Annually	METEO RWANDA, RNRA
60	Number of sectors with approved SEA monitored	0	0	0	0	1	Annual monitoring reports	Annually	MoE
61	% of approved EIA and EA certified projects in compliance (75% or above) with EIAs, EAs Studies and Conditions of approval	0	0	0	0	1	REMA reports	Annually	REMA
62	% of hazardous/toxic waste safely managed	0	0	0	0	1	REMA reports	Annually	REMA
63	Number of circular economy initiatives supported	0	0	0	0	1	REMA, FONERWA, MoE Reports	Annually	REMA
64	% of air quality monitoring stations with Good, Moderate, Unhealthy Air Quality Index	0	0	0	0	1	Station readings; REMA reports	Annually	REMA
65	Number of degraded wetlands ecosystems rehabilitated (fully protected wetlands and complex wetlands)	0	0	0	0	1	REMA and RWFA reports	Annually	REMA
66	% of Nationally Determined Contributions (NDC) programmatic targets achieved	0	0	0	0	1	NDC monitoring report	Annually	NDC
67	Volume of Finance Mobilised (in USD Millions)	0	0	0	0	1	Financing agreements	Annually	MoE
68	Increased knowledge of the available minerals, petroleum, and gas in the country	0	0	0	0	1	RMPGB reports	Annually	RMPGB
69	Value of Annual contributions of mining sector to export revenues in USD ($).	0	0	0	0	1	RMPGB Reports	Annually	RMPGB
70	Level of grade for exported Minerals.	0	0	0	0	1	RMPGB Reports and grade reports of exported minerals	Annually	RMPGB
71	Number of mines complying with environmental and modernised practices	0	0	0	0	1	RMPGB and REMA Reports	Annually	RMPGB

Agriculture

No	Indicator	Agenda					Data source	Frequency	Responsible Institution
		SDG	AU2063	EAC2050	NST1	SSP			
1	Prevalence of undernourishment	1	0	0	0	0	DHS	5 years	NISR
2	Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	1	0	0	0	1	EICV	3 years	NISR
3		1	0	0	0	0	Rwanda National	Annual	RAB

	Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities						Gene bank (RNGB) Operational Plan		
4	Proportion of local breeds classified as being at risk, not-at-risk or at unknown level of risk of extinction	1	0	0	0	0	MINAGRI Records	Annual	MINAGRI
5	The agriculture orientation index for government expenditures	1	0	0	0	0	Records MINAGRI, MINECOFIN	Annual	MINAGRI, MINECOFIN
6	Agricultural export subsidies	1	0	0	0	0	NATIONAL EXPORT STRATEGY; Records MINECOFIN	Annual	MINECOFIN
7	Indicator of food price anomalies	1	0	0	0	0	Consumer price indices	Quarterly and annual	NISR
8	(a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure	1	1	0	0	0	EICV, RNRA	3 years	NISR
9	Proportion of fish stocks within biologically sustainable levels	1	0	0	0	0	RAB Reports	Annual	RAB
10	a) % annual allocation of budget to the agriculture sector.	0	1	0	0	0	Admin	Annual	MINECOFIN
	b) % contribution of the agriculture sector to GDP	0	1	0	0	0	Admin	Annual	MINECOFIN
11	Share of households having less than two meals a day	0	1	0	0	0	CFSVA	3 Years	MINECOFIN/NISR
12	The share of population living below minimal level of daily dietary energy	0	1	0	0	0	CFSVA	4 Years	MINECOFIN/NISR
13	Agricultural total production and productivity doubled	0	1	0	0	0	Admin/ SAS	Annually	NISR
14	% increase of youth and women participating in integrated agricultural value chain	0	1	0	0	0	SAS	Annually	NISR
15	% of reduction of post-harvest losses	0	1	0	0	0	Admin	Annually	FAO
16	% of pastoral and fisher households who are resilient to climate and weather-related risk	0	1	0	0	0	Admin	Annually	RAB
17	% growth of the Agricultural GDP produced by commercial farms	0	1	0	0	0	National Accounts	Annually	NISR
18	(a) % of small-scale farmers graduating into small-scale commercial farming. (b) % of women small-scale women farmers graduating into small-scale commercial farming.	0	1	0	0	0	SAS	Annually	NISR
19	Volume of intra- Africa Trade agricultural commodities and services in place	0	1	0	0	1	Admin	Annually	RDB
20	% of increase in value addition in the fishery sector	0	1	0	0	0	N.ACCOUNT	Quarterly	NISR/BNR
21	Diversity index (proportion of genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives including other socio-economically as well as cultural valuables species maintained)	0	1	0	0	0	Admin	Annually	RAB
22	Food production (million metric tonnes)	0	0	1	0	0	Admin	Annually	NAEB

23	Area of consolidated land	0	0	0	1	1	MINAGRI Reports	Annually	MINAGRI
24	Percentage of farm operations mechanised	0	0	0	1	0	MINAGRI Reports	Annually	MINAGRI
25	Quantity of fertilizer applied	0	0	0	1	0	Agriculture survey	Annually	NISR
26	Strategic reserves stored at district level	0	0	0	1	0	MINAGRI Reports	Annually	MINAGRI
27	Credit to agriculture sector as percentage of total loans	0	0	0	1	0	BNR	Annually	BNR
28	Percentage of agricultural production growth measured by production volumes and fixed 2014 prices	0	0	0	0	1	SAS	Annually	NISR
29	Export value: 356 (Million USD)	0	0	0	0	1	Export statistics	Annually	BNR
30	Number of jobs related to agriculture compared to baseline (gender disaggregated)	0	0	0	0	1	Labour force survey	Quarterly	NISR
31	Average income per smallholder farming household (gender disaggregated)	0	0	0	0	1	EICV	3 years	NISR
32	kcal production per capita	0	0	0	0	1	SAS, Population projections	Seasonal	NISR
33	Percentage of farmers adopting appropriate technology and improved practices (by gender and age)	0	0	0	0	1	SAS	Seasonal	NISR
34	Number of innovative start-ups / businesses created through research partnerships, trainings, extensions, and financial grants (cum.)	0	0	0	0	1	Programme reports	Annual	MINAGRI
35	Women empowerment in Agriculture index	0	0	0	0	1	WEAI Resource Centre		IFPRI
36	Number of new technologies, crops varieties and breeds released	0	0	0	0	1	RAB Reports	Annual	RAB
37	Number of plant and animal genetic resources for food and agriculture secured in either medium or long-term conservation facilities	0	0	0	0	1	To be monitored by RAB	Annual	RAB
38	Percentage of farmers who received extension and/or advisory services in the previous year (disaggregate by gender) including climate smart and nutrition sensitive agriculture	0	0	0	0	1	EICV	3 years	NISR
39	Number of farmers accessing extension services through private sector incentive scheme	0	0	0	0	1	MINAGRI Reports	Annual	MINAGRI, RAB
40	Number of value chain actors (including farmers) trained and supported in business/cooperative management (disaggregated by age and gender) (cum.)	0	0	0	0	1	Project Document	Annual	MINAGRI, RAB
41	Number of women and youth supported in setting up an agri-business (cum.)	0	0	0	0	1	Project document	Annual	MINAGRI, RAB
42	Yield of major crops by type of crop	0	0	0	1	1	SAS, NAEB Reports	Season,	NISR, NAEB
43	Percentage increase in water use efficiency	0	0	0	0	1	RAB Reports	Annual	RAB
44	Animal products produced (Meets, Eggs, Milk)	0	0	0	1	1	RAB Reports	Annual	RAB
45	Percentage of households that consume adequate micro-nutrient food	0	0	0	0	1	RAB, MINAGRI Reports	Annual	RAB, MINAGRI
46	Area of land under erosion control measures (cum.) by type of measure	0	0	0	1	1	RAB, MIS, Survey	Annual	RAB
47	Percentage of farmers using quality seeds on consolidated sites/large-scale farmers	0	0	0	1	1	RAB Reports	Annual	RAB

48	Percentage of farmers use quality seeds: agricultural operator/non- consolidated sites	0	0	0	0	1	RAB Reports	Annual	RAB
49	Percentage of farmers who practice integrated pest management	0	0	0	0	1	RAB Reports	Annual	RAB
50	Percentage of mechanised farm operations	0	0	0	0	1	RAB Reports	Annual	RAB
51	Ha of irrigation developed within an Integrated Water Resources Management Framework (cum.)	0	0	0	1	1	RAB, Districts Reports	Annual	RAB, Districts
52	Percentage of farmers using improved feed / fodder and technologies (hay, silage, improved pasture)	0	0	0	0	1	RAB Reports	Annual	RAB
53	Percentage of livestock owners accessing animal health services	0	0	0	0	1	RAB Reports, Districts, MIS	Annual	RAB, Districts
54	Improved local breed as a percentage of local breeds (by livestock type)	0	0	0	0	1	RAB Reports, Districts	Annual	RAB, Districts
55	Number of fingerlings production	0	0	0	0	1	RAB Reports	Annual	RAB
56	Percentage of farm households that produce micro-nutrient-rich food year around	0	0	0	0	1	MINAGRI Reports	Annual	MINAGRI
57	Percentage of farmers receiving weather and climate information products/services	0	0	0	0	1	Meteo Reports	Annual	MINAGRI, METEO RWANDA
58	Number of vulnerable farmers who have benefitted from asset building programmes (disaggregated by male/female headed HH)	0	0	0	0	1	RAB, Districts, MIS, surveys	Annual	RAB, Districts
59	Percentage of affected farmers receiving post-disaster packages	0	0	0	0	1	MIDIMAR	Annual	MIDIMAR
60	Food loss index (Proxy measure: post-harvest losses) by type of crop	0	0	0	0	1	Post-Harvest Loss (survey), M&E MINAGRI	Annual	RAB, MINAGRI
61	Percentage of men and women engaged in agriculture that have access to financial services to be able to transact agriculture business - CAADP Indicator	0	0	0	0	1	FinScope		NISR
62	Reduction rate of the gap between wholesale price and farm gate price	0	0	0	0	1	E-soko+ /value chain-based surveys		MINAGRI
63	Percentage of famers involved in agribusiness by gender and age	0	0	0	0	1	EICV	3 years	NISR
64	Number of other market infrastructure developed - constructed, rehabilitated, maintained (Cum) by type	0	0	0	0	1	Project document	Annual	MINAGRI, RAB
65	Number of farmers (male/female) accessing the Market Information Tool (E-soko+) (cum.)	0	0	0	0	1	MINAGRI Reports	Annual	MINAGRI
66	Number of formalised out-grower schemes and similar modalities implemented with GoR support (cum.)	0	0	0	0	1	RAB/NAEB Reports	Annual	RAB, NAEB
67	Number of agricultural financial services and insurance products provided through SACCOS and coops	0	0	0	0	1	MINAGRI Reports	Annual	MIANAGRI
68	Kcal stored in Rwandan Strategic Grain Reserve (cum.) by national and district levels.	0	0	0	0	1	MINAGRI Reports	Annual	MINAGRI
69	Grain storage facilities (cum.)	0	0	0	0	1	RAB Reports	Annual	RAB
70	Quality assurance and regulation mechanisms established	0	0	0	0	1	MINAGRI Reports	Annual	MINAGRI

71	Level of satisfaction in services delivery (public & private) in agriculture (effectiveness & efficiency)	0	0	0	0	1	MINAGRI score card	Annual	MINAGRI
72	Percentage of private Investment to public Investment in agriculture	0	0	0	0	1	RDB/MINECOFIN Financial reports	Annual	RDB, MINECOFIN
73	Percentage of FDI to Public Investment in agriculture	0	0	0	0	1	Foreign Capital Census, Fin reports	Annual	MINECOFIN
74	Share of new authorised agriculture loans	0	0	0	0	1	MONETARY POLICY AND FINANCIAL	Annual	BNR
75	Scores in the Enabling the Business of Agriculture report (to be customised to the Rwanda's context) - average score by type	0	0	0	0	1	WB report		WB
76	Land for coffee and tea	0	0	0	0	1	NAEB	Annual	NAEB
77	Number of registered private investment and PPPs in agricultural sector	0	0	0	0	1	National PPP Committee, MINAGRI	Annual	MINAGRI
78	Number of domestic private seed and fertiliser production and extension services companies (cum.)	0	0	0	0	1	RAB Reports	Annual	RAB
79	Percentage of operationalised agricultural investment eligible for investment certificate	0	0	0	0	1	Agricultural investment plans	Annual	RAB
80	Percentage of budget executed at districts level	0	0	0	0	1	National Budget	Annual	MINECOFIN
81	Percentage of decentralised project integrating cross-cutting components	0	0	0	0	1	Project/district reports	Annual	RAB
82	Number of Information System applications developed and integrated into agricultural information platform	0	0	0	0	1	SMART reports, M&E reports	Annual	SMART RWANDA

Private Sector Development & Youth Employment

No	Indicator	SDG	Agenda AU2063	Agenda EAC2050	NST1	SSP	Data source	Frequency	Responsible Institution
1	Proportion of tariff lines applied to imports from least developed countries and developing countries with zero tariff	1	0	0	0	0	Annual Report	Annually/6 months	RRA
2	Proportion of traded wildlife that was poached or illicitly trafficked	1	0	0	0	0	Annual Report	Annually/6 months	RDB
3	Developing countries and least developed countries share of global exports	1	0	0	0	0	Annual Report	Annually/6 months	BNR
4	Proportion of time spent on unpaid domestic and care work, by sex, age, and location	1	0	0	0	0	LFS	Annually	NISR

5	Proportion of informal employment in non-agriculture employment, by sex	1	0	0	0	0	LFS	Annually	NISR
6	Average hourly earnings of female and male employees, by occupation, age, and persons with disabilities	1	0	0	0	0	LFS	Annually/5 years	NISR
7	Unemployment rate, by sex, age, and persons with disabilities	1	1	1	0	0	LFS	Annually/5 years	NISR
8	Proportion of youth (aged 15-24 years) not in education, employment, or training	1	0	0	0	0	LFS	Annually	NISR
9	Proportion and number of children aged 5-17 years engaged in child labour, by sex and age	1	1	0	0	0	LFS		NISR
10	Manufacturing value added as a proportion of GDP and per capita	1	1	0	0	0	LFS	Annually	NISR
11	Manufacturing employment as a proportion of total employment	1	0	0	0	0	LFS	Annually	NISR
12	Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status	1	0	0	0	0	MIFOTRA Reports		MIFOTRA
13	Tourism direct GDP as a proportion of total GDP and in growth rate	1	1	0	0	0	RDB Reports	Annually/6 months	RDB
14	Proportion of small-scale industries in total industry value added	1	0	0	0	0	Unspecified	Annually	Unspecified
15	Proportion of small-scale industries with a loan or line of credit	1	0	0	0	0	Unspecified	Annually	Unspecified
16	Proportion of medium and high-tech industry value added in total value added	1	0	0	0	0	Unspecified	3 YEARS	Unspecified
17	Labour share of GDP, comprising wages and social protection transfers	1	0	0	0	0	Unspecified	3 YEARS	Unspecified
18	Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	1	0	0	0	0	Unspecified	Annually	Unspecified
19	Number of PPP and civil society partnership projects	0	1	0	0	0	Admin	Annual	Unspecified
20	% share of total output received from extractive sector industries owned by locals	0	1	0	0	0	Admin	Annual	Unspecified
21	% of food imported	0	1	0	0	0	Admin	Annual	Unspecified
22	% contribution of the creative arts to GDP in real terms increased	0	1	0	0	0	Admin	Annual	Unspecified
23	Rate of increase of intra-African trade volume per annum	0	1	0	0	0	Admin	Annual	Unspecified

24	% increase of intra-Africa trade in agriculture commodities	0	1	0	0	0	Admin	Annual	Unspecified
25	% of informal sector ventures graduating into Formal Enterprises	0	1	0	0	0	Admin	Annual	Unspecified
26	Underemployment rate by age, sex	0	1	0	0	0	LFS	Annually/6 months	NISR
27	Proportion of employed people living below the minimum wage	0	1	0	0	0	LFS	Annually/6 months	NISR
28	% share of total output received from non-extractive sector industries owned by locals	0	1	0	0	0	N.ACCOUNT	Annually	NISR
29	% increase of intra-Africa trade in service	0	1	0	0	0	Admin	Annually	MINECOFIN/ RDB
30	Number of commodities exchanges established	0	1	0	0	0			
31	% increase of the coastal tourism financing the development of the programmes of the communities	0	1	0	0	0	Admin	Annually	RDB
32	1. % of tariff lines liberalised within African states 2. Number of Non-tariff barriers (NTBs) reported and eliminated	0	1	0	0	0	Adm		MINEACOM
33	Proportion of business start-ups by youth by formal/informal and by industry	0	1	0	0	0	IBES	Annually	NISR
34	Proportion of Youth and Children engaged in talent-based development programmes, leisure, and recreation	0	1	0	0	0	Admin	Annually	MINIYOUTH
35	Finished and semi-finished products as a proportion of total exports	0	1	0	0	0	Adm	Annually	BNR
36	Export diversification index (by product; by market, by destination (intra and intercontinental)	0	1	0	0	0	Adm	Annually	BNR
37	Resources raised through innovative financing mechanisms as a % of national budget	0	1	0	0	0	Admin	Annually	RDB
38	Manufactured Export (as % of total Export)	0	0	1	0	1	Admin	Annually	MINICOM
39	FDI net inflows (% of GDP)	0	0	1	0	1	Admin	Annually	BNR
40	Food production (million metric tonnes)	0	0	1	0	0	Admin	Annually	NAEB
41	Number of new decent and productive jobs created	0	0	0	1	0	LFS	Annually	NISR
42	Annual export growth	0	0	0	1	0	N. Accounts	Annually	NISR
43	Value of exports	0	0	0	1	0	N. Accounts	Annually	NISR
44	Exports of goods and Services as a percentage of GDP.	0	0	0	1	0	N. Accounts	Annually	NISR
45	Industry as share of GDP	0	0	0	1	0	N. Accounts	Annually	NISR
46	Value of tourism revenues	0	0	0	1	0	annual report	Annually	RDB
47	Value of MICE revenues	0	0	0	1	0	annual report	Annually	RDB
48	Annual exports growth	0	0	0	0	1		Annually	PSDYE Sector
49	Services share of total exports	0	0	0	0	1		Annually	PSDYE Sector
50	Private Investment as share of GDP*	0	0	0	0	1	N. Accounts	Annually	NISR
51	Credit to SMEs as share of GDP	0	0	0	0	1	N. Accounts	Annually	NISR
52	Number of active firms, older than two years with four or more employees, dis-aggregated by gender of owner	0	0	0	0	1		Annually	PSDYE Sector

53	Total factor Productivity (TFP)	0	0	0	0	1		Annually	PSDYE Sector
54	R&D expenditure as share of GDP	0	0	0	0	1	N. Accounts	Annually	NISR
55	Off-farm jobs created annually, disaggregated by gender	0	0	0	0	1		Annually	PSDYE Sector
56	Labour productivity in off-farm sectors	0	0	0	0	1		Annually	PSDYE Sector

Social Protection									
		Agenda							
No	Indicator	SD	AU2063	EAC2050		NST1	SSP	Data source	Frequency	Responsible Institution
1	Proportion of population below the international poverty line, by sex, age, employment status and geographical location (urban/rural)	1	0	0	0	0	EICV	3 years	NISR
2	Proportion of population living below the national poverty line, by sex and age	1	0	0	0	1	EICV	3 years	NISR
3	Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	1	0	0	0	0	EICV	3 years	NISR
4	Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, new-borns, work-injury victims and the poor and the vulnerable	1	1	0	0	1	Annual report	Annual	MINALOC
5	Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population	1	0	0	0	0	EICV	3 Years	NISR
6	Proportion of formal sector workers covered by the national social protection programme	0	1	0	0	0	EICV/ADMIN	3 years/annual	NISR/MINALOC
7	Proportion of eligible informal sector workers and rural labour covered by the national social protection programme	0	1	0	0	0	EICV/ADMIN	3 years/annual	NISR/MINALOC
8	Percentage of the population living below extreme poverty line	0	0	0	1	1	EICV	3 Years	NISR
9	% of social protection beneficiary households demonstrating a significant improvement in socio-economic status	0	0	0	0	1	Min Pkg household profiling mechanism	annually	MINALOC
10	Number of extremely poor child headed HHs accessing social protection	0	0	0	0	1	JSR reports/EICV	annually	MINALOC
11	% of PwDs covered by social protection	0	0	0	0	1	JSR reports/EICV	annually	MINALOC
12	Number workers enrolled in voluntary long-term savings scheme	0	0	0	0	1	RSSB annual reports	annually	MINALOC
13	Number of extremely poor mothers and infants in first the 1,000 days benefitting from nutrition-sensitive Child Support Grant	0	0	0	0	1	LODA annual report	annually	MINALOC
14	Number of households in crisis provided with other short-term social assistance (temporary financial assistance, shelter, health fees, etc)	0	0	0	0	1	MINALOC, LODA, RDRC, FARG reports	annually	MINALOC
15	% of VUP cPW expenditure contributing to Disaster Risk Reduction	0	0	0	0	1	LODA annual reports	annually	MINALOC

16	Number of PwDs with access to rehabilitation support services	0	0	0	0	1	Report from Annual Orthopaedic and Rehab Centres	annually	MINALOC
17	Number of vulnerable children/youths benefitting from NRS rehabilitation and reintegration services	0	0	0	0	1	NRS annual reports	annually	MINALOC
18	% of children in orphanages integrated into families	0	0	0	0	1	NCC annual reports	annually	
19	%. of eligible social protection beneficiary households receiving asset transfers under MPG framework	0	0	0	0	1	iSP-MIS Household Profiling MINAGRI/RAB reports	annually	LODA, MINAGRI, CSOs, private sector
20	Number of community-based projects implemented under Ubudehe programme	0	0	0	0	1	LODA MEIS/reports	annually	LODA, Local gov
21	% of extremely poor households who are members of a community savings group/VSLA	0	0	0	0	1	SP sector household profiling system	annually	MINALOC
22	Number of extremely poor and vulnerable individuals receiving formal skills training and apprenticeships	0	0	0	0	1	LODA, FARG, RDRC, NCPD reports	annually	MINALOC
23	Number of studies/evaluations conducted through SPSWG and disseminated	0	0	0	0	1	JSR reports	annually	MINALOC
24	% of Sectors and Cells with dedicated Social Protection staff (SEDOs and SPOs)	0	0	0	0	1	JSR reports	annually	MINALOC
25	% of social protection beneficiaries satisfied with quality of services	0	0	0	0	1	RGB Rwanda Citizens Report Card	annually	MINALOC
26	% of households in Ubudehe category 1 with a performance contract	0	0	0	0	1		annually	MINALOC
27	% of core social protection programme payments delivered on-time	0	0	0	0	1	iSP-MIS	annually	MINALOC
28	Number of formal partnerships between districts and CSOs on social protection	0	0	0	0	1	District reports	annually	MINALOC
29	% of formal complaints (in MEIS and CMS) resolved within the approved time	0	0	0	0	1	LODA MEIS	annually	MINALOC
30	Number of poor and vulnerable households supported through HGS (e.g. Umuganda and Kuremera, Urugerero)	0	0	0	0	1	District reports	annually	MINALOC

Water and Sanitation									
			Agenda						
No	Indicator	SDG	AU2063	EAC2050	NST1	SSP	Data source	Frequency	Responsible Institution
1	Proportion of population using safely managed drinking water services	1	0	0	0	0	EICV	3 years	NISR
2	Proportion of population using safely managed sanitation services, including a hand-washing facility with soap and water	1	0	0	0	0	EICV	3 years	NISR

3	Proportion of wastewater safely treated	1	0	0	0	0	Admin		WASAC / MININFRA
4	Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities	1	0	0	0	1	EICV	3 years	NISR
5	% of population with access to safe drinking water	0	1	0	0	0	EICV	3 years	NISR
6	% of population with access to improved sanitation facilities b) % of population who use improved sanitation facilities	0	1	0	0	0	EICV	3 years	NISR
7	% of budget allocated to water and sanitation programme	0	1	0	0	0	Admin	Annually	MINECOFIN
8	% of wastewater recycled for agriculture and industrial use	0	1	0	0	0	Admin	Annually	MININFRA
9	Access to safe water (%)	0	0	1	0	0	EICV	3 years	NISR
10	Access to improved sanitation (%)	0	0	1	0	0	EICV	3 years	NISR
11	Percentage of Households using an improved water source	0	0	0	1	0	EICV	3 years	NISR
12	Percentage of Households with access to basic sanitation facilities	0	0	0	1	0	EICV	3 years	NISR
13	% of households with improved water source in dwellings /yard by region	0	0	0	0	1	EICV	3 years	NISR
14	% of population using an improved water source in Rwanda	0	0	0	0	1	EICV	3 years	NISR
15	% of households with clean drinking water available when needed in rural areas	0	0	0	0	1	EICV	3 years	NISR
16	% of rural households using an improved water source within 500m	0	0	0	0	1	EICV	3 years	NISR
17	% of population using an improved water source within 30 minutes round-trip by region	0	0	0	0	1	EICV	3 years	NISR
18	% of population using an improved water source by region	0	0	0	0	1	EICV	3 years	NISR
19	% of households with clean drinking water available when needed in urban areas	0	0	0	0	1	EICV	3 years	NISR
20	% of urban households using an improved water source within 200m	0	0	0	0	1	EICV	3 years	NISR
21	% of health centres with improved Water Supply facilities	0	0	0	0	1	Admin	Annually	MININFRA
22	% of schools with improved WS facilities	0	0	0	0	1	Admin	Annually	MININFRA
23	% of rural improved water sources functional at the time of spot check	0	0	0	0	1	Admin	Annually	MININFRA
24	% of public rural water supply systems managed by a contracted private operator	0	0	0	0	1	Admin	Annually	MININFRA
25	% of fully functional water supply system in urban areas	0	0	0	0	1	Admin	Annually	MININFRA
26	% of population using an improved water source which is of free contamination at the point of delivery, by region	0	0	0	0	1	Admin	Annually	MININFRA
27	% cost recovery (revenue / O&M costs) for rural piped water schemes	0	0	0	0	1	Admin	Annually	MININFRA
28	(%) non-revenue water (WASAC)	0	0	0	0	1	Admin	Annually	MININFRA
29	Total urban water production capacity (000'm^3 per day)	0	0	0	0	1	Admin	Annually	MININFRA

30	% of population with basic on-site sanitation facilities which safely contain waste in situ, by region	0	0	0	0	1	Admin	Annually	MININFRA
31	% of population using basic improved sanitation facilities, by region	0	0	0	0	1	Admin	Annually	MININFRA
32	% of households with on-site improved sanitation facilities or septic tank have access to safe sludge disposal services, by region	0	0	0	0	1	Admin	Annually	MININFRA
33	% of households with access to collective sewerage services	0	0	0	0	1	Admin	Annually	MININFRA
34	% of industries with wastewater treatment systems	0	0	0	0	1	Admin	Annually	MININFRA
35	% of schools with access to sanitation facilities which safely contain waste	0	0	0	0	1	Admin	Annually	MININFRA
36	% of schools with improved Sanitation facilities	0	0	0	0	1	Admin	Annually	MININFRA
37	% of Health centres with sanitation facilities which safely contain waste	0	0	0	0	1	Admin	Annually	MININFRA
38	% of health centres with improved Sanitation facilities	0	0	0	0	1	Admin	Annually	MININFRA
39	% of public offices with sanitation facilities which safely contain waste	0	0	0	0	1	Admin	Annually	MININFRA
40	% of public offices with improved sanitation facilities	0	0	0	0	1	Admin	Annually	MININFRA
41	% of public places (markets, car parks, petroleum stations, highways) with sanitation facilities which safely contain waste	0	0	0	0	1	Admin	Annually	MININFRA
42	% of public places (markets, car parks, bus bays, petroleum stations, highways) with improved sanitation facilities	0	0	0	0	1	Admin	Annually	MININFRA
43	% of urban population in areas covered by master plans with storm water considerations	0	0	0	0	1	Admin	Annually	MININFRA
44	% of households sorting waste	0	0	0	0	1	Admin	Annually	MININFRA
45	% of households contracted with service providers collecting and transporting waste in urban areas	0	0	0	0	1	Admin	Annually	MININFRA
46	% of Districts with appropriate solid waste disposal facilities/ modern Landfills	0	0	0	0	1	Admin	Annually	MININFRA
47	Number of districts with functional District WASH Boards	0	0	0	0	1	Admin	Annually	MININFRA
48	Percentage (%) of districts with at least 1 qualified WSS engineer	0	0	0	0	1	Admin	Annually	MININFRA
49	% women represented in key positions of water user committees	0	0	0	0	1	Admin	Annually	MININFRA
50	% female occupying key positions in Water and Sanitation Sector institutions	0	0	0	0	1	Admin	Annually	MININFRA
51	Parity female to male headed households using basic improved sanitation facilities	0	0	0	0	1	Admin	Annually	MININFRA